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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/025,867	12/26/2001	Vincent So	76855-23 /pw	7539

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EXAMINER

HELLNER, MARK

ART UNIT	PAPER NUMBER
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3663

DATE MAILED: 09/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/025,867

Applicant(s)

SO ET AL.

Examiner

Mark Hellner

Art Unit

3663

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-32 is/are allowed.
- 6) ☒ Claim(s) 1,4-7 and 10 is/are rejected.
- 7) ☒ Claim(s) 2,3,5-7 and 11 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Lee (5,709,721).

Lee discloses an optical amplifier comprising: means (1 on input side) for splitting an optical signal into two path components having a noise path component and signal path component (note no optical signal is completely free of noise); means (7) for independently amplifying the signals traversing each of the paths, each path carrying ASE parallel to the polarization direction of the fiber and the ASE being uncorrelated with respect to phase; means (2) for performing a phase adjustment to each of the path signals so that the signal path components can be constructively combined; and means (1 at output) for combining the optical signals to produce an output signal.

Claim 1 and 4 read on Lee because ASE is derived from the photons generated by random transition from the excited level to the ground state. As a result, ASE has random polarization and phase which, in turn, means that some uncorrelated ASE is generated in the fibers (7) of Lee.

Claim Rejections - 35 USC § 103

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5-7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

The scope and contents of the prior art are demonstrated by Lee as applied to claims 1 and 4.

2. Ascertaining the differences between the prior art and the claims at issue.

The difference between claims 5 and 7, and Lee is using OTM having different path lengths to make phase adjustment.

The difference between claim 6 and Lee is using non-linear effects to provide phase adjustment.

The difference between claim 10 and Lee is that the effective path difference be in phase or in multiples of 2π .

3. Resolving the level of ordinary skill in the pertinent art.

The level of skill in the art, as demonstrated by the Lee reference can be considered to be at least an undergraduate degree in optical engineering.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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The Lee reference teaches relative phase control via element (2) to a person of ordinary skill in the art, thus motivating this person to seek out known solutions to the problem of phase control.

Claims 5 and 7 would have been obvious because a person with a degree in optical engineering would have known that phase difference is a function of relative path length of propagating sinusoidal signals and, as such, would have known that path length adjustment yields phase adjustment. Note that the symbol shift tolerance set forth by claim 7 is not specified in any mathematical relationship.

A person with a degree in optical engineering would also have been cognizant of materials that provide a phase shift optical signals due to non-linear effects.

Phase matching at multiples of 2π is well known from the sinusoidal functions taught by the basic physics of sinusoidal signals.

Claims 2, 3, 8, 9 and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art does not teach or suggest dividing ASE to or between a subsidiary output (claims 2 and 3).

The relationship set for by claim 8 cannot be inferred from the simple phase shifters disclosed by Lee.

Claim 9 is at least objected to for reciting the use of coherence length for the noise path components.

Lee et al does not teach or suggest a relationship involving frequency difference of signals in the two paths (claim 11).

Claims 12-32 are allowed.

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The Lee reference does not teach or suggest diverting a portion of the power of the noise path to a subsidiary output within the context of claim 12. Claims 13-32 are derived from claim 12.

Any inquiry concerning this communication should be directed to Mark Hellner at telephone number 703 306 4155.

Mark Hellner

Primary Examiner

AU 3663

A handwritten signature in black ink that reads "Mark Hellner". The signature is written in a cursive style with a large, stylized 'M' and 'H'.